

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference PP03-0114	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/KR2004/000279	International filing date(day/month/year) 12 FEBRUARY 2004 (12.02.2004)	Priority date (day/month/year) 27 JUNE 2003 (27.06.2003)	
International Patent Classification (IPC) or national classification and IPC IPC7 C08J 3/02			
Applicant LG CHEM, LTD et al			

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 4 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
 - ☐ (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:
 - ☒ Box No. I Basis of the report
 - ☐ Box No. II Priority
 - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Box No. IV Lack of unity of invention
 - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☐ Box No. VI Certain documents cited
 - ☐ Box No. VII Certain defects in the international application
 - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 18 APRIL 2005 (18.04.2005)	Date of completion of this report 12 OCTOBER 2005 (12.10.2005)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer KANG, HYUNG SEOK Telephone No. 82-42-481-5597 

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/000279

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
 - ☒ the international application as originally filed/furnished
 - ☐ the description:
 - pages _____ as originally filed/furnished
 - pages* _____ received by this Authority on _____
 - pages* _____ received by this Authority on _____
 - ☐ the claims:
 - pages _____ as originally filed/furnished
 - pages* _____ as amended (together with any statement) under Article 19
 - pages* _____ received by this Authority on _____
 - pages* _____ received by this Authority on _____
 - ☐ the drawings:
 - pages _____ as originally filed/furnished
 - pages* _____ received by this Authority on _____
 - pages* _____ received by this Authority on _____
 - ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages _____
 - ☐ the claims, Nos. _____
 - ☐ the drawings, sheets _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages _____
 - ☐ the claims, Nos. _____
 - ☐ the drawings, sheets _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-16	YES
	Claims	17	NO
Inventive step (IS)	Claims	1-16	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-17	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

1. Reference is made to the following documents:

D1: US 2003-105222 A (Choi, Ho-Yeol et al.) 5 June 2003

2. Novelty and Inventive Step

Claim 1 of the present invention relates to a method of preparing a styrene-butadiene latex comprising the steps of manufacturing a core latex of styrene-butadiene polymers; coating the core latex with shell polymers multiple times; and adjusting the gel content and molecular weight of the outermost layer of the latex by adding a chain transfer agent singly.

Likewise, D1 also discloses a method of preparing styrene-butadiene core-shell latex comprising the steps of preparing seed latex; preparing first-shell covered latex; and preparing second-shell covered latex. A chain transfer agent is added in each step to control molecular weight, gel content, and structure of latex particle.

It is noted in claim 1 that a chain transfer agent is singly added after manufacturing step of shell polymers to control the properties of the outermost layer of the latex, while a chain transfer agent in D1 is added in each step of preparing seed, the first shell, and the second shell.

Moreover, D1 does not suggest that the outermost layer of latex modified by a chain transfer agent renders a superior adhesive force to final core-shell latex. Consequently, single addition of a chain transfer agent after manufacturing step of shell polymers offers the basis of the inventive step to claim 1.

(Continued on Supplemental Sheet.)

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Box V.

Since the independent claim 1 satisfies the requirement set out in PCT Article 33(2)~(3), the dependent claims 2~16 referring to the independent claim 1 are also recognized to satisfy the requirement of PCT Article 33(2)~(3).

Therefore, claims 1~16 of the present invention are considered to be novel and to involve an inventive step under PCT Article 33(2)~(3).

However, claim 17 of the present invention relates to a styrene-butadiene latex having a structure in which a core of styrene-butadiene polymers is coated with multiple layers of styrene-butadiene polymers.

D1 also discloses a method of preparing styrene-butadiene core-shell latex comprising the steps of preparing seed latex; preparing first-shell covered latex; and preparing second-shell covered latex. All the elements of claim 17 are already disclosed in D1 in that a core and multiple layers are prepared from styrene-butadiene polymers.

Therefore, claim 17 of the present invention is not novel. (PCT Article 33(2)).